NASA Earth Observing Systems Simulation Suite (NEOS^3)

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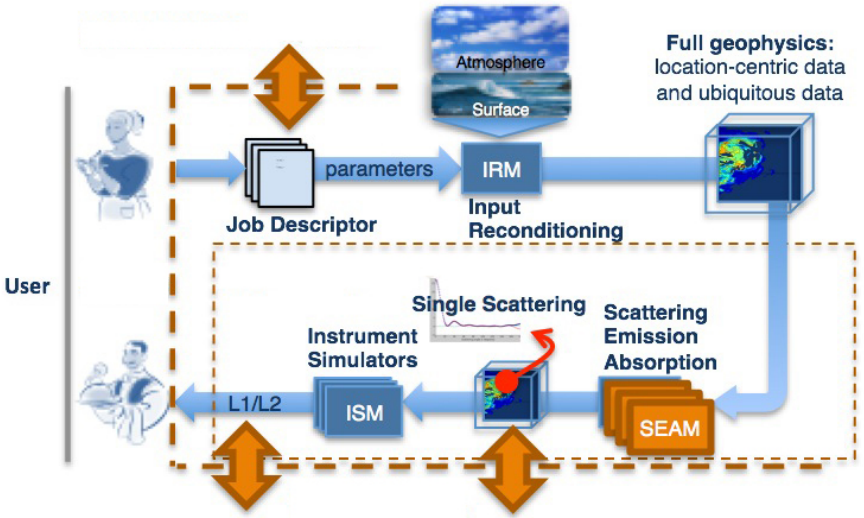
Objective

Develop NEOS^3 as a service-based tool suite providing simulated measurements for a wide range of instruments aimed at remote sensing of the atmosphere, on the A-Train and missions such as GPM, SMAP, ACE, SCLP, and others, based on input from atmospheric models. It will enable:

- Immediate and accurate verification of the achievability of desired scientific requirements.
- Efficient implementation of multi-instrument, multi-platform Observing System Simulation Experiments (OSSE's).
- Rapid integration of new models.
- Efficient and accurate performance assessment of on-board or ground-based processing methods to achieve scientific requirements in a resource limited environment.



NEOS^3 Architecture

Approach

Build NEOS^3 leveraging a prior architecture (ISSARS) and modules. Specific augmentations include:

- State-of-the-art scattering and emission modules for various multi-layer complex surfaces.
- Automated (batch parameterized, unsupervised) OSSE interface for direct process-to-process operation and production of additional products and diagnostics.
- Hybrid Cloud Computing implementation for computational efficiency.

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Key Milestones

• Surface physical models for land implemented	06/13
• Surface physical models integrated	12/13
• Functional automated OSSE interface completed	06/14
• Hybrid cloud implementation completed	12/14
• Populate and analyze all look up tables for advanced surface scattering and emission calculations	03/15
• NEOS^3 demonstration	06/15

$TRL_{in} = 3$ $TRL_{current} = 3$

ESTO Earth Science Technology Office